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ABSTRACT

This booklet for teachers offers a variety of strategies and examples from real classroom experiences to facilitate the making of connections across subject areas and ways of learning. The approach is based on a vision of education as enabling students to construct knowledge with teachers assisting them in making a wide variety of connections between the familiar and the new, the concrete and the abstract, across subjects, and between students' knowledge and their values or actions. Booklet sections address planning for connections, using the senses, experiences, holistic thinking, learning styles, student needs, global thinking, the American Indian medicine wheel as a symbol of relationships, attitudes toward change, and metacognition. Throughout the book are diagrams illustrating various concepts, descriptions of actual projects, experiences, and suggested practices from real teachers and classrooms, and possible points for reader reflection or action. Appendixes contain further actual examples from teacher experiences with planning, experience, and learning styles. Contains 10 references. (JB)

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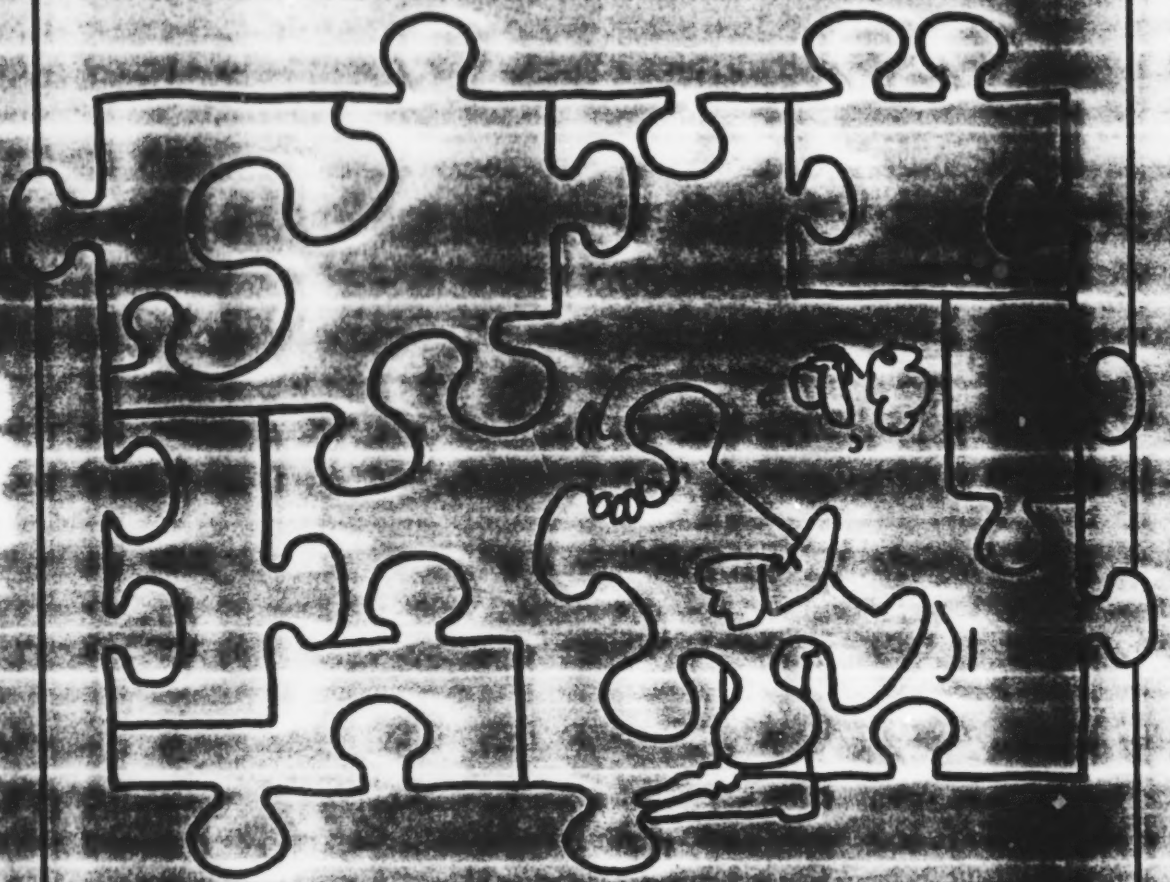
CONNECTING

..GETTING IT TOGETHER.. GETTING IT TOGETHER..



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SERIES NO. 13

SDRU

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Prepared for

The Saskatchewan Instructional Development and Research Unit

and

The Saskatchewan Professional Development Unit

by

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Production assistance from Sheena Thakrar
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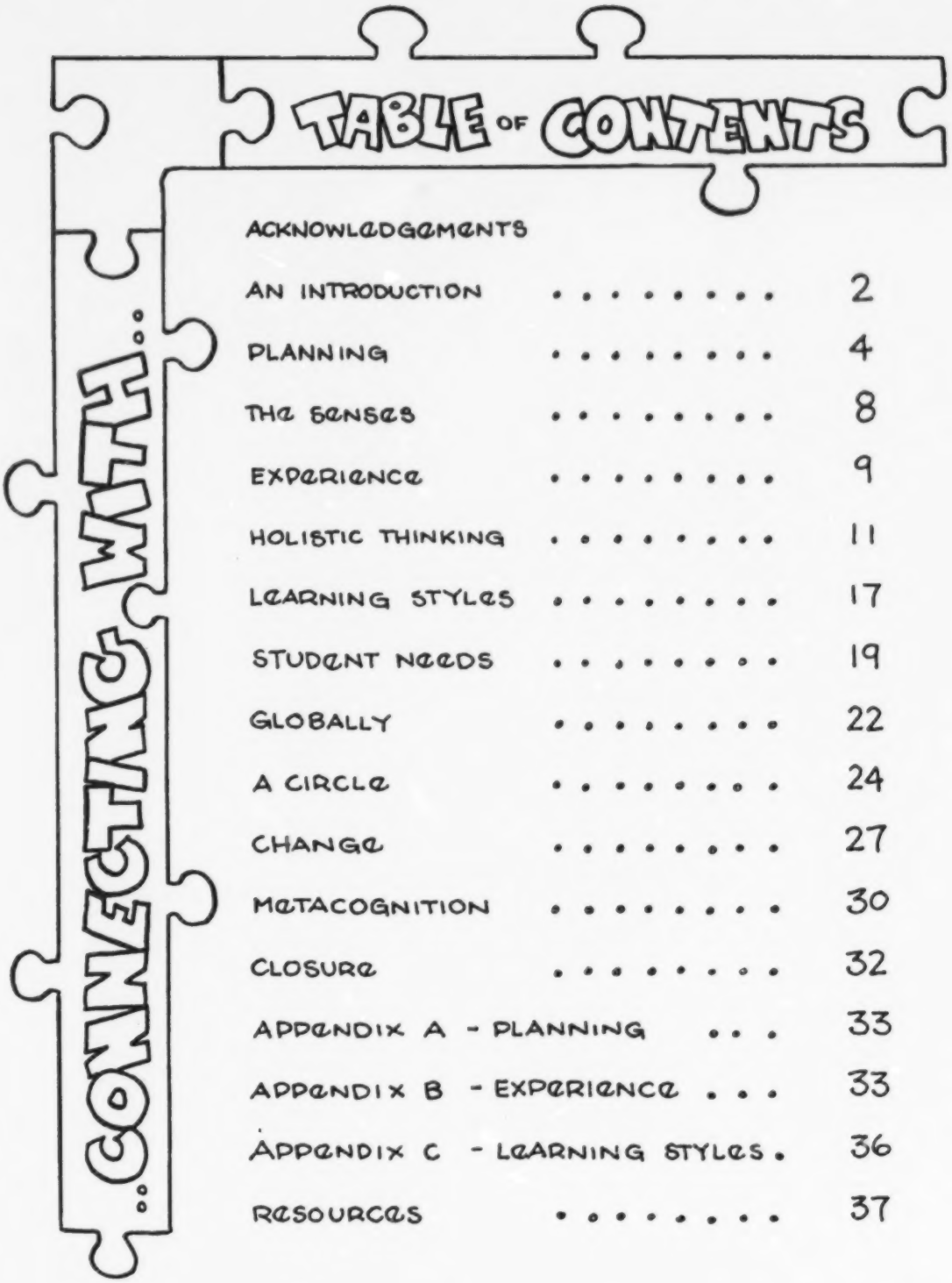

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CONNECTING WITH

AN INTRODUCTION

Over the years, various metaphors about the teaching process have been developed. One suggests that a child arrives at school as an empty vessel waiting to be filled with wondrous knowledge.

KNOWLEDGE GIVEN AWAY FREE DAILY - BRING CONTAINER

Another claims that children are as new clay for teachers to mould and shape as they see fit.

It is unlikely that the metaphors originated with teachers.

Many teachers believed, however, that the best way to teach students was to tell them things, give them notes to copy, and have them memorize facts. Granted, some of us learned quite a lot just that way.

But research and our own experiences have shown us that the learning of all students can be enhanced when a greater variety of teaching strategies is used in the classroom.

We have also learned that really knowing something requires that the knowledge be constructed by the learner. With that in mind, the teacher, rather than being the 'pourer of information' or the 'moulder of clay,' is the person who provides the structure and the opportunity for the students to construct knowledge for themselves.

To enable students to construct knowledge, the teacher needs to assist them in making a wide variety of connections: between the familiar and the new, between concrete and abstract ideas, between what they learn in Social Studies and what is taught in English, between their knowledge and their values or actions, between what they think and what they feel.

Most teachers in any given unit of study do use a variety of strategies that help them as well as students make different kinds of connections, perhaps more than they are aware of. The following is an example.

Marianne is a teacher librarian. *We have several computers in our library. Each time I assign a project, I make sure that some part of it involves the use of a computer, even if it's just printing labels.*

One of my regular classes is a Grade 1 French Immersion class. I realized that the students had never written about themselves, so I taught them how to write response journals. After I convinced them that I would be able to read their invented spelling, I had them write their journal entries on the computer.

Later in the year, they became very interested in dinosaurs. They learned a lot about them through various media, and then each student chose one kind of dinosaur to report on. Part of their report was computer generated. Using size 72 print, they reported three facts related to size, food and habitat.

When all their material was ready, we had a practice session. I tape recorded their presentations so they could self-evaluate, that is, listen for volume, enunciation, and so on.

I asked two Grade 8 students to videotape the final presentations. There were a lot of giggles when they watched themselves the first time. However, some time later, I had them watch the presentations again. This time students were asked to identify one thing they themselves had done well. Other students gave them '2 hugs' (positive comments) and 'a wish' (I wish you had done ...).

We made copies of the video to send home to parents. The children seldom speak French at home, and seeing their children communicating well in French is confirming for parents.

Actually, we use the video camera a lot. Initially students are nervous, but they soon become quite comfortable with the medium. Students use it to practice their presentations. They then watch and critique themselves. How's that for authentic evaluation?

YOUR TURN

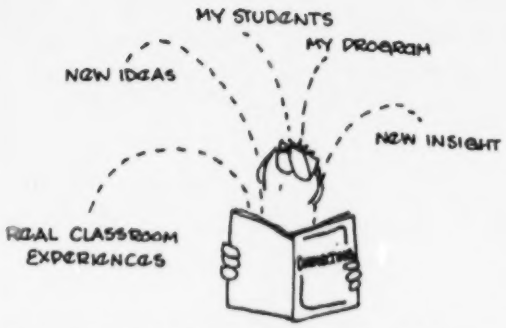
Marianne identified some of the connections she and her students made.

◊ Writing with computers
◊ Evaluation with video equipment
◊ Grade 8 students working with Grade 1 students
◊ Teachers connecting with parents

Perhaps you can identify other connections.

Consider a series of classes you have taught recently.

◊ What different connections did you and your students make?
◊ Were connections made between different groups of people? between learning and evaluation?
◊ Were the students able to connect their newly gained understandings or skills to other situations?



As you work or read through this booklet, you will find a variety of other examples of real classroom experiences in which teachers and students make important connections. Although the stories may not directly match your situation, it is hoped that at least some will provide you with insights and new ideas that may be readily adapted to suit you, your program, and your students.

CONNECTING WITH PLANNING

Fragmentation is very much a part of our lives. We tend to separate our private and public lives, work and recreation, the body and the mind. We tend to group people according to their skin colour, status, or some 'ism and then see humanity as 'us' and 'them.' We create boundaries. We fence our properties.

Many people would agree that the major problems facing our world today are environmental issues - an ozone layer that is breaking down, domestic and industrial wastes dumped into our waters, inappropriate land use, and the list goes on. Why have these problems developed to this extent? The reasons are, of course, complex. But at least part of the answer lies in **fragmentation**. Our society has viewed industrialization and agricultural practices within the context of short term economic gains without paying attention to the environmental connections.

One might argue that some fragmentation is necessary in order to understand and control our complex lives. This may be true, **but it is a mistake to deal only with the fragments without a clear view of the many connections within the big picture**.

In education we typically divide curricula by subjects. We need to see and teach the connections between them. We tend to teach a course. We need to see and teach the connections it has with students' lives. We tend to limit schooling to what happens within the classroom walls. We need to make connections with what's outside. We tend to equate education to cognitive development. But our brains live and operate within the context of our bodies, our values, and our beliefs. Teachers and students need to make those connections.

Fragmentation and connectedness can coexist. We can deal with the fragments but must remember to also make the connections.

Making connections between subjects is easier to do when a teacher has the same students for most of the day. However, even in large high schools where specialization is the norm, teachers are finding it helpful to plan across subject areas.

Seth is a Grade 6 teacher. *The other Grade 6 teacher and I often plan units of work together. Sometimes we team teach in the library or gym. We like to choose a specific theme from one of the core subjects and teach it using a flexible timetable. We usually read the suggestions in the curriculum documents and do a quick search for resource materials. When we get together to plan, we sometimes use what we call a* ***Web of Possibilities.***

When we planned the section on slavery in Social Studies, we made up the web shown on the next page. We then highlighted the 'definitely do' items and started planning, using our next week's timetable.

YOUR TURN

- ◊ For another scenario on connecting with planning, turn to Appendix A.
- ◊ Have a look at Seth's planning web on the following pages.
- ◊ Choose a topic, theme or concept that you are planning for your classroom. Begin by naming some subjects in which integration of the topic might occur.
- ◊ Discuss your ideas with a colleague.
- ◊ Note them on your planning web.

As you work through this booklet, expand on this web and you will finish with your own Web of Possibilities.

Reading

**Novel study - Underground to Canada, Roll of Thunder Hear My Cry, Slave Dancer, others?*
**Biographies - Lincoln, Harriet Tubman, Sojourner Truth, Jesse Jackson, Barbara Jordan*
**Deal with metaphor, mood, imagery, suspense, motivation, story line, character*
**Research for project*

Role-playing

**Perspectives of slaves, owners, traders*
**Problem solving*

Spelling

**Teacher & students create weekly lists of relevant words - post, study, use, test*

Writing

**Response journals*
**Web ideas (e.g., about slavery)*
**Write chapter titles, some summaries (novels)*
**Identify problems, predict solutions*
**List & create examples of similes*
**Ask questions*
**List 20 moments (happiest, funniest)*
**Jot notes (research)*
**Compare Underground to Canada (UC) & House of Dies Drear - (HDD)- matrix - chart paper*

	Images	Feelings	Experiences	Character	Message	Change
UC						
HDD						

CONCEPTS:

A Web of

Music

(Check with music teacher)
**Spirituals, working songs, protest music, freedom songs, rap*
**Listen for themes, musical patterns*
**Sing to enjoy, perform in assembly*
**Compose using current issues*

Application, values

**Playground classroom behaviour*
- respect for differences
- human dignity
- problem solving

Phys. Ed.

**Competitive games - winners/losers*
**Cooperative games - winners/winners*

Resources
*Books
- school/public libraries
*Periodicals - Nat. Geographic
*Human - university historian

Social Studies
*Historical contexts
- colonialism, events involving slavery, abolition
- modes of ocean travel
- civil rights movement
*Social justice issues
- laws, rights, responsibilities
- stereotyping, racism, sexism, equality
*Canadian applications
- slavery in Canada
- Native rights, freedoms
*Economics of cotton & sugar
*Geography & climate - West Africa, Caribbean, Brazil, southern U.S.

Health
*Extend concepts
- 'Slaves' to fashion, addictions
- 'Freedom' to make responsible choices
- Coping with hardships, suffering

INTERACTION *slavery Possibilities

Science
*Extend concepts of interaction, interdependence as in natural ecosystems
*Apply to agriculture of cotton & sugar (compare with grain farming in Sask.)
- soil, climate requirements
- growing cycle, planting & harvesting procedures
- disease, bugs
- technology - cotton gin

Viewing
*Video
- House of Dies Drear
- Human Rights in Canada
- Unlearning Indian Stereotypes
*Check with video and film catalogues

Evaluation
*Discuss criteria & processes with students
*Checklists
- complete daily assignments
- bring materials to school
- participation in group activities
*Marks - daily assignments
- final projects
*Self/peer/teacher evaluations

Art activities
*Find examples of art re: slavery, racism (e.g., auction posters, current Indian art)
*Make a class multicultural quilt

Projects
*Student choice in consultation with teacher
*Must involve research, jot notes, resource list, & product that reflects research
*May involve drama, video, written work, art, music, display, models, etc.

CONNECTING WITH THE SENSES

Research indicates that all learners, including adults, benefit from using all their senses in learning. The learning experiences are enriched and are remembered longer.

Some research indicates that humans are actually born with 15 to 20 senses. Just think what incredible learning experiences teachers could orchestrate to stimulate them all!

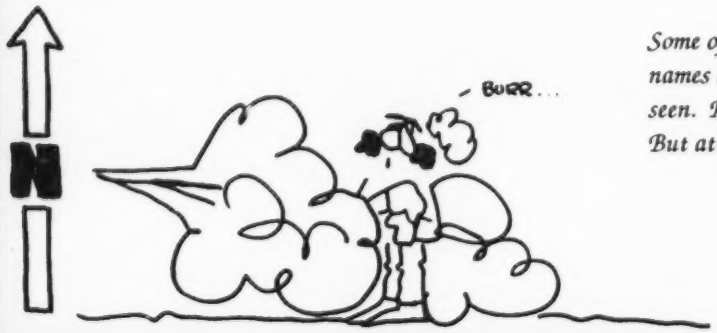
Melissa teaches a Grade 2 class. *When she studied the Science curriculum, she decided that she would not teach the units sequentially as outlined, but rather structure a variety of activities that would teach major concepts from several units.*

Melissa: Our school is located near a creek with a variety of trees, shrubs and grasses growing along the wide banks and in an adjacent park.

After discussing some basic safety and environmental rules, I took my students to the park. As they sat quietly in a circle, we identified sounds we could hear, described the smells that our noses could detect, pointed out what we saw on the ground and in the sky, discussed how things we touched felt. Because of the use of chemicals, we did not taste things from the site, but sometimes we brought lunch.

The children each found a 'special place' within the area. With a pad and pencil they illustrated and described their place. Sometimes they used tape measures, thermometers, magnifying lenses, binoculars or other instruments. They also spent time alone just to feel and enjoy their spots.

In class and outdoors, the students learned that leaves can have smooth or serrated edges, that clouds can be cumulus, that stems may be woody or filled with pith, that many things have distinct smells, and that a cold wind may blow from the north.



Some of the students wanted to know the names of the plants, insects and birds they had seen. Resources were made available to them. But attaching labels was not a major focus.

12

My goals were for the students to hone their observation skills using various senses, to learn to use vocabulary necessary to describe what was observed, and to use and value the natural environment as a learning resource. But I also wanted them to connect with the place and the earth with their whole beings and develop some special intuitive feelings about their spots.

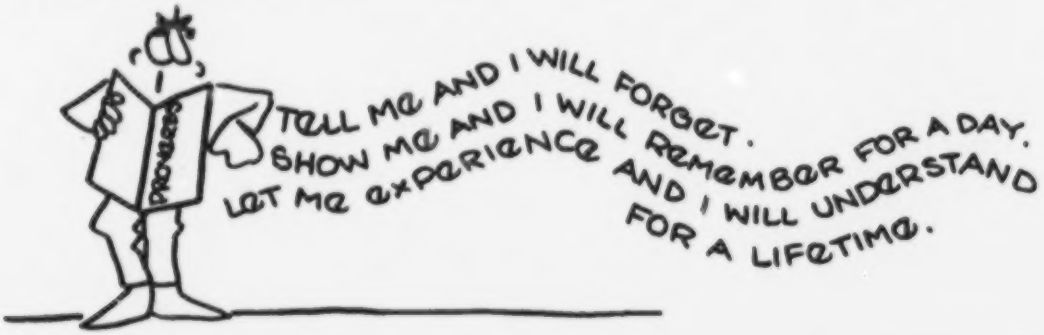
At least one day each month, we visited our special places. During each visit the children identified and described changes, or expanded on what they observed using new vocabulary. They drew pictures, wrote phrases and paragraphs, created poems, composed songs, made rubbings, and dreamed dreams.

YOUR TURN

- ◊ Think about the connections Melissa and her students made that you might apply to your own teaching situation and the topic you have chosen.
- ◊ Discuss your ideas with a colleague and note them on your **Web of Possibilities**.

CONNECTING WITH EXPERIENCE

We have all heard variations of an old Chinese proverb that claims:


PROVERBS
TELL ME AND I WILL FORGET.
SHOW ME AND I WILL REMEMBER FOR A DAY.
LET ME EXPERIENCE AND I WILL UNDERSTAND
FOR A LIFETIME.

The proverb is correct up to a point.
Experience alone does not necessarily make us 'understand for a lifetime.'
However, experience along with reflection and application,
which provide the all important connections,
certainly can be a powerful teacher.

But a teacher may well ask,
"How can students experience
World War I?
space travel?
another's culture?
hunger?"

Experiences
may be direct or vicarious,
real or simulated.

Experiences
need to be debriefed for students
to learn from them.

Kathryn teaches Grade 9 History to a class of Grade 10 students. *Her class is not unique. Two boys have been bumped from a variety of foster homes and have been in trouble with the law. Some of the girls make it quite obvious that their priorities are clothes, make-up and boys. History doesn't rank. Several students receive special help from a tutor. Absenteeism is a problem. Evidence of overactive hormones is obvious.*

One of the activities suggested in a unit dealing with the major concept of causality, is staging trials of Galileo and Martin Luther.

Kathryn: Considering my class, I was really dubious but decided to give it a try. I worked with the teacher librarian and gathered a lot of material at different reading levels. I divided the class into two groups, one for Galileo and one for Luther. The two groups then subdivided into the prosecution and defence. The groups made charts delegating specific roles and jobs.

The students had two weeks to research and plan for their trials. I gave them as much help and guidance as possible during class time. The students, some for the first time, did a lot of homework. Some groups even arranged to meet on the weekend.

The principal acted as the judge. Students not directly involved in the trial acted as jury, press and interested observers.

I was pleased with the trials. The principal was impressed. The students wanted to know if they could do it again with different people from history.

Actually, I discovered some unexpected benefits. Class attendance and behaviour improved. Some students who had shown little or no interest in history before, were front and centre in asking questions and offering comments. One student even asked for an appointment to discuss problems he was having in school.

Some of my colleagues claim that experiential teaching is too time consuming and wouldn't allow them to cover all the material and complete the course. But I am one of a team of three teachers. I have to cover the same material as the other two teachers because the school requires that we give common final exams with, in my case, each teacher submitting one third of the questions. So I have to teach the same material in the same length of time.

Some teachers claim you can use different strategies only with 'good' classes. Teachers used other adjectives to describe this class. But in this assignment I found that the students used their energy to learn, not distract one another.

Some teachers claim the students do not really learn the required 'content' in activities like these. But these students did well on an exam I gave at the end of this section.

YOUR TURN

◊ You may wish to turn to Appendix B for other examples describing structured experiences.

◊ What connections did the teachers and their students make in these activities?

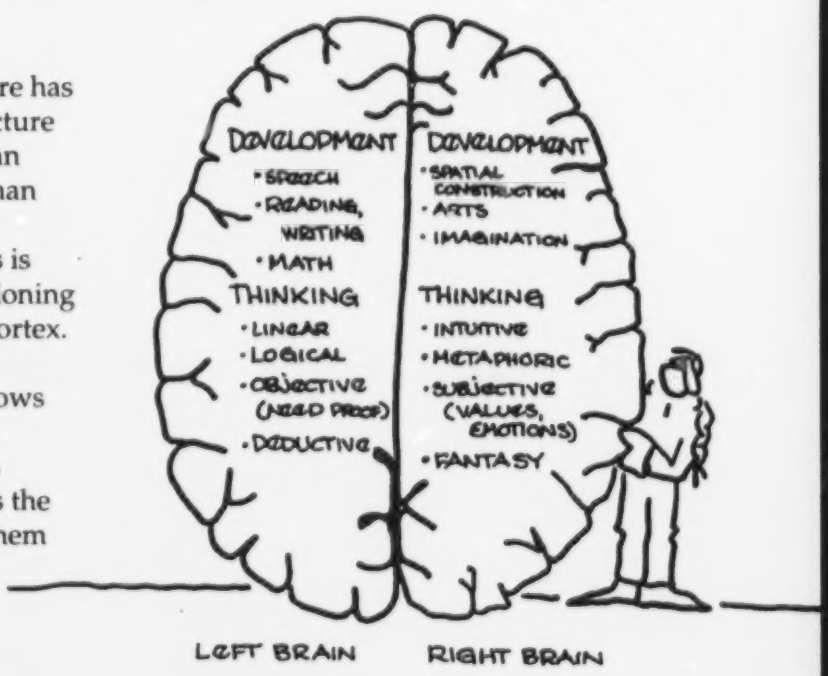
◊ What did you connect with?

◊ Think of your teaching situation. What can you take from these stories to adapt to your own planning? Add your ideas to your **Web of Possibilities**.

CONNECTING WITH HOLISTIC THINKING

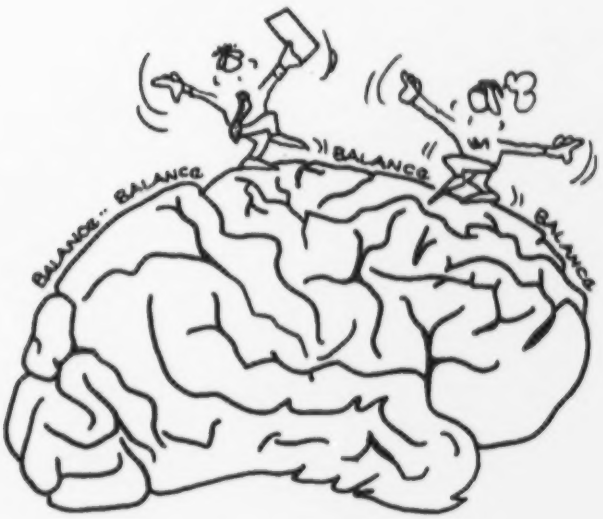
Within the last few decades more has been discovered about the structure and functioning of the brain than about any other part of the human body. The research that is particularly relevant to teachers is that which deals with the functioning of the two hemispheres of the cortex.

The illustration on the right shows the major functions of the two hemispheres. A band of nerves called the corpus callosum joins the two hemispheres and enables them to function simultaneously.



Roger Sperry (1972), an American psychologist, received a Nobel prize for his research. Among other interesting discoveries, he found the following:

- The two hemispheres function in harmony with one another.
- When one side is active, the other goes into a more relaxed state.
- Although some people may be highly skilled in one area, each person has a brain with a full range of capabilities. For some people there may be areas that have potential but are not developed. However, the development can occur at any time.
- Geniuses are not necessarily the eccentrics we envisage as being dominant in one hemisphere of the brain, but are often quite balanced in their interests and activities. Einstein had not only a mathematical mind, but also nurtured his imagination and ability to dream. Sylvia Fedoruk was not only a brilliant scientist, she was also an athlete excelling in curling and badminton. Leonardo da Vinci was not only a great artist, but also left detailed drawings that reflected expertise in engineering and physiology.



BALANCE
is the operative word here.
It is a challenge for teachers and students
to actively engage
both hemispheres of the brain
many times
during the course of the day.

One way to engage both hemispheres
is to organize information visually.
Some organizers
may have
prescribed structures.
Others may be
quite free flowing and creative.

Bob teaches Grade 2.

Bob: I often use a simple web to organize information. I start out by brainstorming a list, watching a video, or dealing with information. The webs are used to organize the list or summarize the information or video. The first webs we create are done with the whole class. Once the students get the idea, they work in groups or individually.

After the class watched a film about spiders, for example, the students worked in small groups and were given five minutes to complete a summary web of the film. We discussed the webs and posted them on the bulletin board. One group did the web shown here.

Last year I taught Grade 1. I did webbing with them too. I gave the students topics to research and took them to the library where I had pulled all kinds of well illustrated books including texts, encyclopedia, National Geographics, and so on. The books were too difficult for the students to read, but they used the pictures to get information and their webs were a combination of pictures and words.

I find webbing very useful. It's a quick way to check what students know or have learned. It's a good way to prepare for writing a poem or paragraph in that it supplies students with ideas and the necessary vocabulary to express them. When students know they will have to create a web after a video, for example, their attention is more focused. Also, not all of my students can write good sentences but they can all contribute to a web.

Joseph teaches Grade 12 Psychology. *The study of human development is part of the course.*

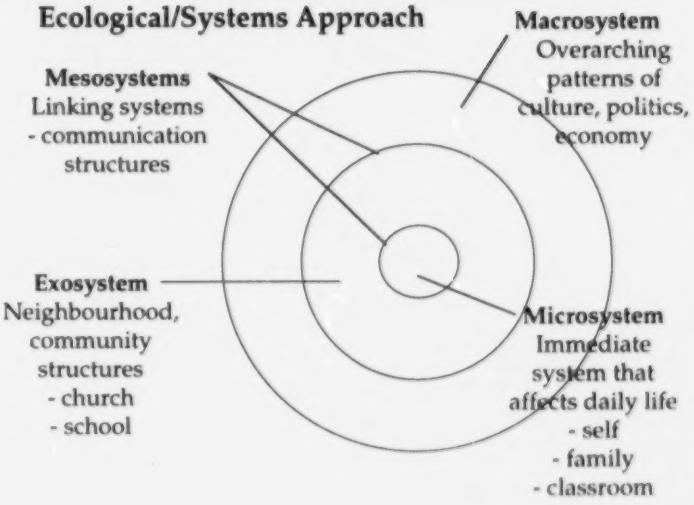
Recently, researchers in this field have moved the focus of this study from that of the individual to a more holistic approach, believing that humans are far more affected by other people, groups of people, and by social forces than was previously believed.

This broader approach is sometimes called an ***ecological or systems*** *approach. Just as a person studying an animal needs to understand its ecosystem, to understand human development we need to understand the diverse human environments.*

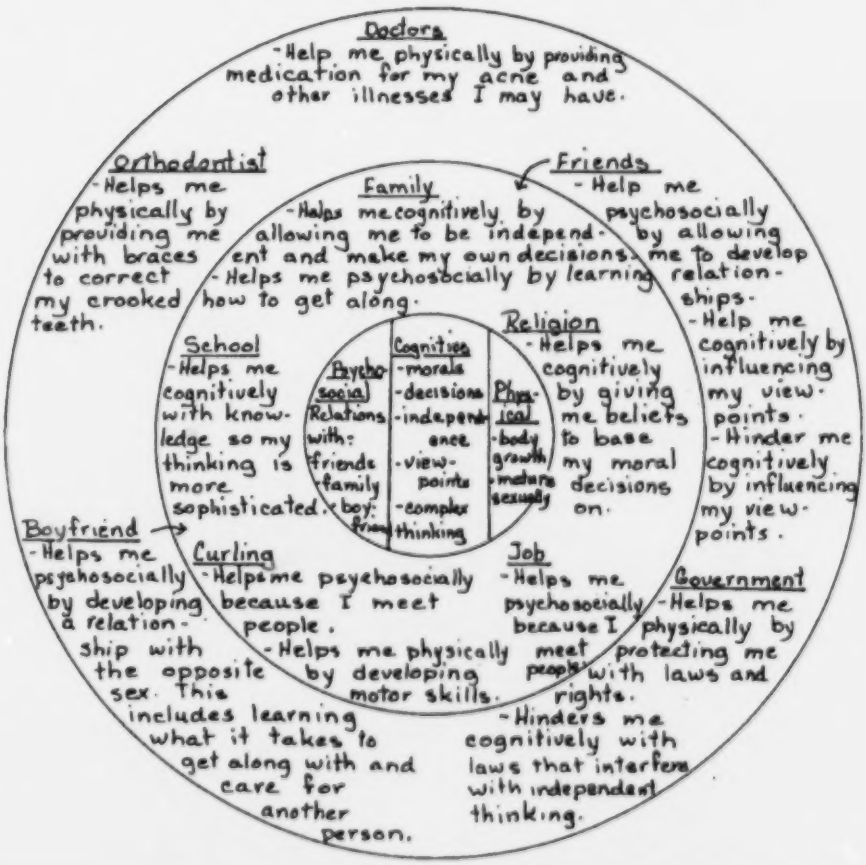
According to Bronfenbrenner (1981), human development is supported by three ecosystems nested within each other with a fourth (the mesosytems) providing the links between them.

Joseph had his students use the 3-nested diagram to do an analysis of their own adolescent development. The one below is one student's analysis.

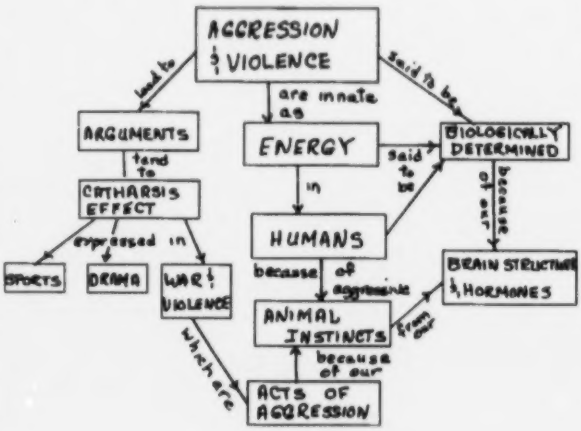
A variation of this systems approach was used by a principal who, with her staff, did an analysis of the school.



Ecological/Systems Approach: Use this approach to construct a map which shows the various systems that affect or direct your own personal adolescent development.


Doctors
-Help me physically by providing medication for my acne and other illnesses I may have.
Orthodontist
-Helps me physically by providing me with braces to correct my crooked teeth.
Family
-Helps me cognitively by allowing me to be independent and make my own decisions.
-Helps me psychosocially by learning how to get along.
Friends
-Help me psychosocially by allowing me to develop relationships.
-Help me cognitively by influencing my viewpoints.
-Hinder me cognitively by influencing my viewpoints.
School
-Helps me cognitively with knowledge so my thinking is more sophisticated.
Religion
-Helps me cognitively by giving me beliefs to base my moral decisions on.
Psychosocial Relations with: friends family boy/girlfriend
Cognitive -morals -decisions -independence -viewpoints -complex thinking
Physical -body growth/maturation sexually
Boyfriend
-Helps me psychosocially by developing a relationship with the opposite sex. This includes learning what it takes to get along with and care for another person.
Curling
-Helps me psychosocially because I meet people.
-Helps me physically by developing motor skills.
Job
-Helps me psychosocially because I meet people.
Government
-Helps me physically by protecting me with laws and rights.
-Hinders me cognitively with laws that interfere with independent thinking.

Joseph also uses concept mapping in his course. In one class, he gave the students an article that dealt with human aggression. He asked the students to read, discuss, and then summarize the article using a concept map. The following was developed by one of the groups.



Joseph finds that assigning a concept map has several advantages.

- ◊ *It's easier to mark than an essay.*
- ◊ *Students enjoy it.*
- ◊ *Plagiarism is not possible.*
- ◊ *Students can readily see diverse interpretations.*
- ◊ *It provides a good springboard to discussion.*
- ◊ *It supports the idea that there is more than one 'right answer.'*
- ◊ *It has possibilities for both formative and summative evaluation.*
- ◊ *Students with limited verbal and written skills can use placement and arrows to demonstrate what they understand.*
- ◊ *As students explain how they see the relationships among various concepts, their understanding is strengthened.*

Concept mapping involves three things:
listing
grouping
labelling

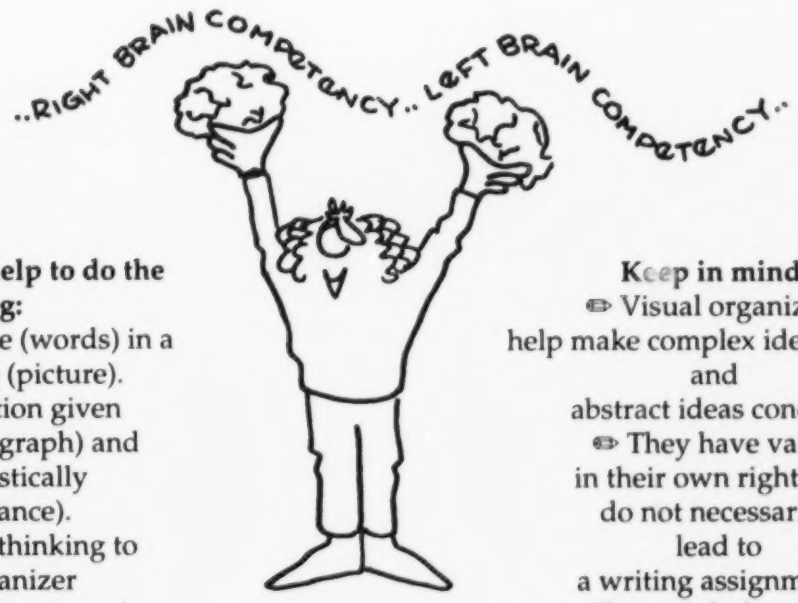
In Joseph's class the students ***listed*** *the concepts in the article.*
They ***grouped*** *them and*
used ***labels*** *to name and connect the concepts.*

Webs, concept maps, and nested diagrams are a few of many visual organizers used by teachers. Others include timelines, graphs, matrices, Vee diagrams, overlapping circles, flow charts, a wide range of advance organizers. The list goes on and on.

It is important that all students learn to organize information in paragraphs and essays. Students who tend toward right brain competency will learn to write more readily if they are taught how to first organize information using a visual pattern. Using visual organizers will help students, who tend toward left brain competency, gain new skills and understandings.

When students learn to organize information visually, they are engaging both hemispheres of the brain.

ORGANIZE INFORMATION VISUALLY



Visual organizers help to do the following:

- Organize language (words) in a spatial structure (picture).
- Take information given sequentially (paragraph) and portray it holistically (see it at a glance).
- Use deductive thinking to create an organizer (e.g., hierarchical structure) that may also be interpreted inductively (read from bottom up).
- Use logical patterns (a then b) that may accommodate intuition or metaphor.
- Take objective material and organize it in a personal or subjective way.
- Provide a format to think about things critically and creatively.

Keep in mind:

- Visual organizers help make complex ideas simple and abstract ideas concrete.
- They have value in their own right and do not necessarily lead to a writing assignment.
- They might be used as an introduction to or summary of a unit, as a group or individual project, or as an exam question.
- They will add variety to your classes.
- Students who have found other assignments difficult may excel with one using a visual format.

YOUR TURN

- ◊ Appendix C has more examples in which various visual organizers are used.
- ◊ Think about your teaching situation. What did you connect with in this section?
- ◊ You may want to discuss your ideas with a colleague and add them to your planning web.

CONNECTING WITH

LEARNING STYLES

PLANNING - THE SENSES - EXPERIENCE - HOLISTIC THINKING

Somewhat related to the research on the functioning of the two hemispheres of the brain, is a host of research on learning styles.

Every person has a learning style which is as individual as a personal thumb print. Optimum learning may occur at a preferred time (morning/night) or in a preferred environment (brightly/dimly lit room, soft/hard chair, warm/cool temperature, music on/off). A person may be an auditory, visual, tactile or kinesthetic learner. One may need a formal classroom setting, another a more casual arrangement. Some learn better in groups while others function better by themselves. Some tend to think in linear or logical patterns, others are more intuitive. And the list of descriptors goes on.

Teachers tend to teach according to their own preferred learning style. Teachers who are auditory learners tend to lecture. Those who are self-directed tend to assign individual projects. Teachers who learn best in a silent, formal, well-lit environment, tend to insist on those conditions in their classrooms.

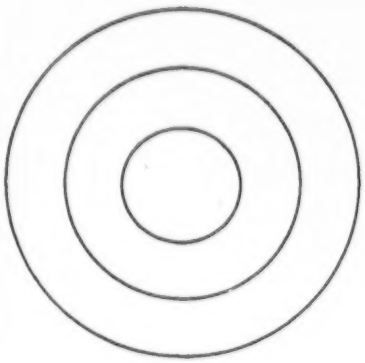
Teachers who instruct and evaluate primarily in one mode are short changing those students who learn and communicate best within the context of other modes. Teachers who use a wide range of strategies give each of their students a better chance to excel.

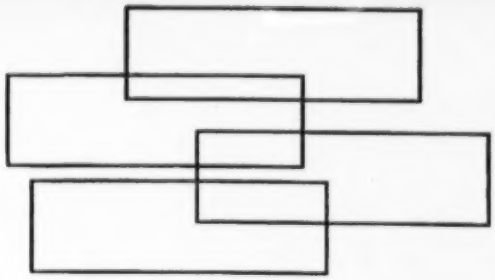
***Beth and her Grade 8 students** have been studying the dangers of smoking. For one class activity she had the students working with consequence wheels.*

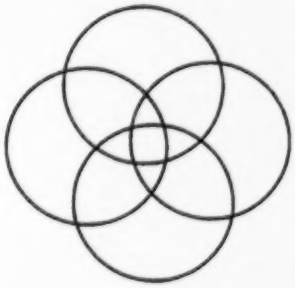
Beth: I developed an example with the class and illustrated it on the chalk board. The issue (If I smoke, then ....) is placed in a bubble at the centre of the page. From it radiates the first level of consequences, joined by one line. The second level of consequences radiate from the first level with two lines.

I then divided the class into groups of 4 or 5 students. Working with chart paper and a thin felt pen, each group completed a consequence wheel. Part of one group's wheel looked like the one shown below.

After the wheels were completed, the students colour coded the consequences that were similar. At the end of the class period, one group presented their whole wheel to the class. Subsequent groups presented what they had that was different. Needless to say, an animated discussion followed.

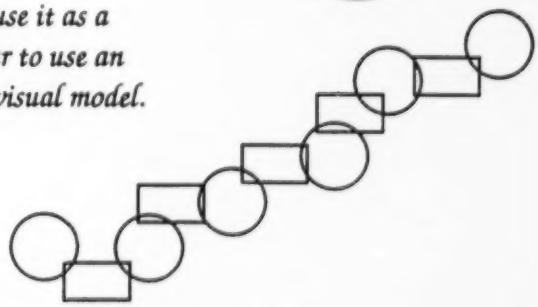


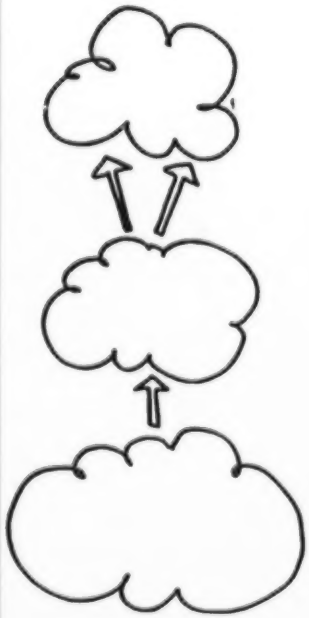


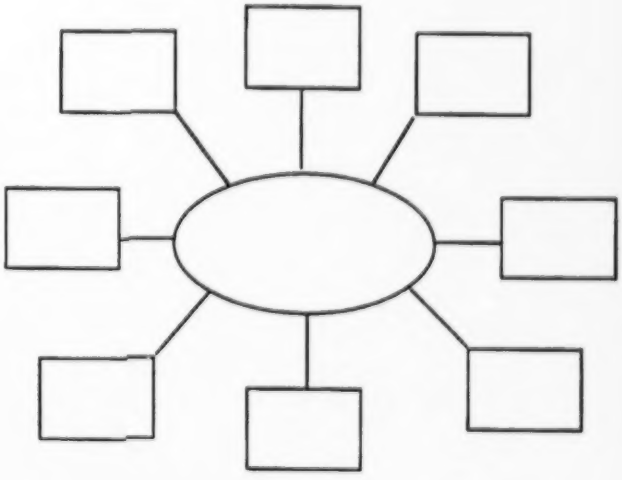


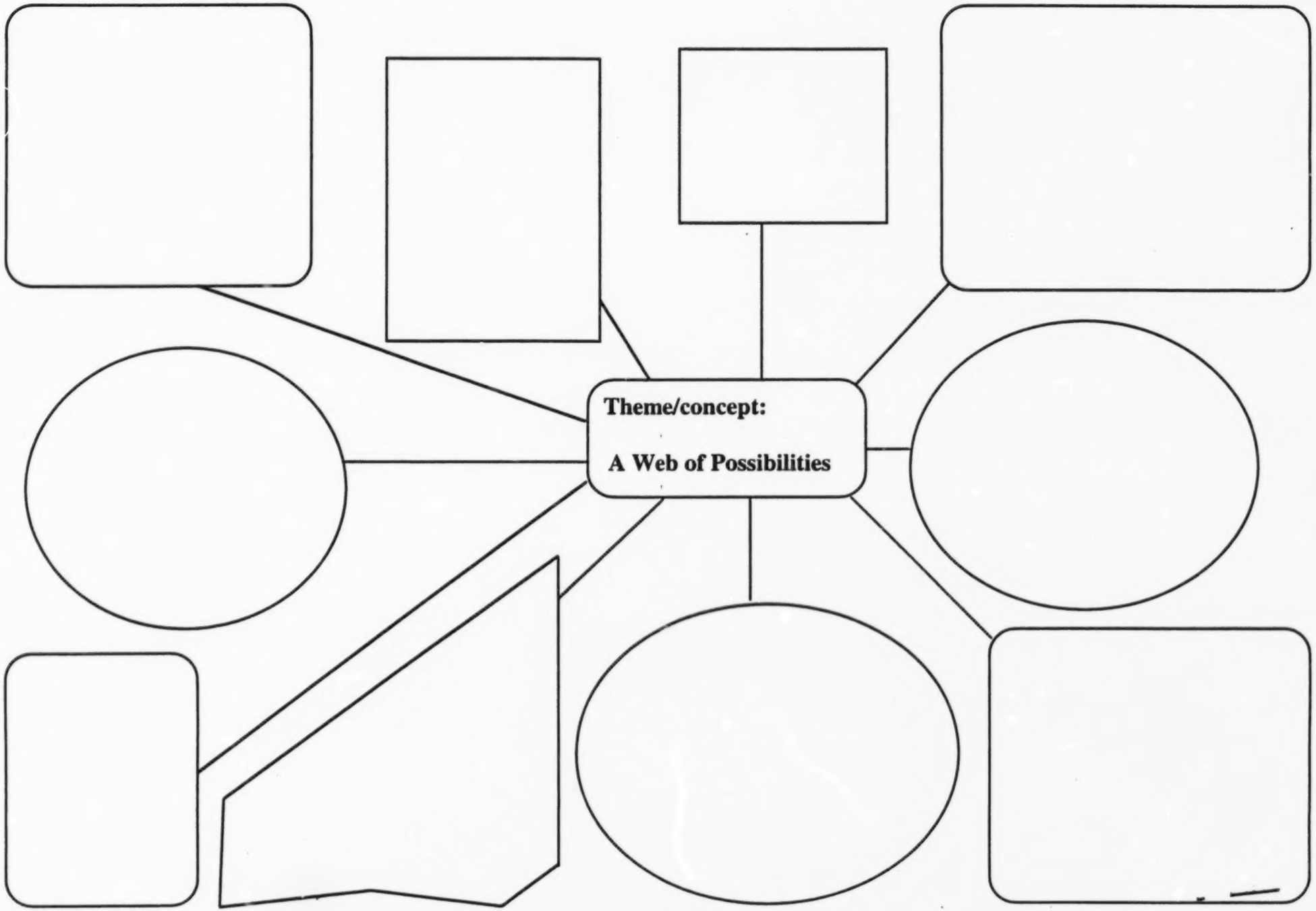
My Web of Possibilities

You may remove this insert and use it as a planning guide, or you may prefer to use an unstructured web or a different visual model.








Theme/concept:
A Web of Possibilities

REFLECTIONS

What worked well?

What was the key to making it work?

What connections did we make?

What unexpected connections were made?

If I were to do this again, what would I change?

What were the best resources?

I've used variations of this activity.

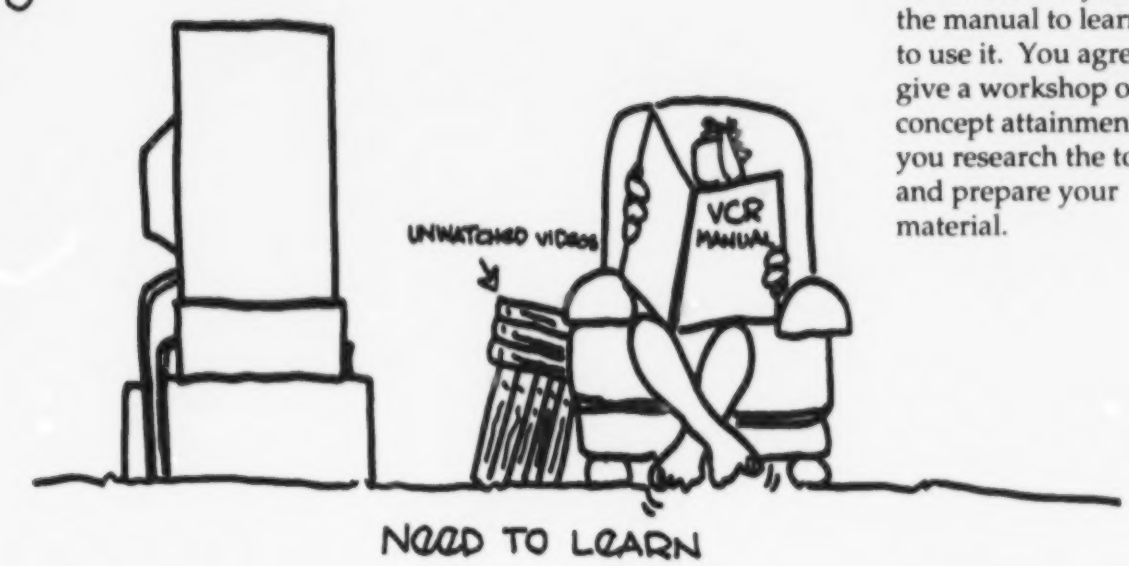
- *In a whole class situation, the issue and the first order of consequences were identified. Then each group took one consequence and developed it to the tenth order. Class charts were made and consequences were again colour coded.*
- *In some cases we used colour coding to identify short term and long term consequences.*
- *With some students who preferred a more linear diagram, a flow chart model was used.*
- *In Social Studies, the students used the pattern to diagram possible consequences of democratic, autocratic and consensus decision making.*

YOUR TURN

◊ You may wish to turn to Appendix C for other examples of how teachers help accommodate different learning styles.

◊ Consider your planning web. Jot down some ideas.

CONNECTING WITH STUDENT NEEDS



We know that the best motivation to learn is the need to learn. You buy a new VCR and you study the manual to learn how to use it. You agree to give a workshop on concept attainment, and you research the topic and prepare your material.

Cameron teaches Grade 7. Each month he chooses a theme from a curriculum. Then, as much as possible, he uses material from other subject areas to support and relate to the chosen theme. He plans and develops activities with the needs and interests of his students in mind.

For the month of April, he chose the theme 'birth' from the Health curriculum. In Health class he and the students dealt with the physical and emotional aspects of birth - a loving relationship, sexuality, birth control, abortion, the development of the fetus, and so on. In Social Studies they related what they were learning to the concept of change. In Language Arts they read stories from books and diaries about growing up. They discussed and wrote about their current skills and achievements and what they needed to be successful in Grade 8. The latter became more than a writing project.

The students decided that they wanted to make it a project for the week. One group made a pizza at home and videotaped the process. They wrote a script for the video in which they identified each ingredient as a symbol of what they needed for Grade 8.

It was close to Easter. Cameron brought some Ukrainian Easter eggs to class. This became another project. They studied and discussed the symbols used. They compared the Ukrainian and traditional Indian symbols. With the help of some parent volunteers, the students made Easter eggs using both Ukrainian and Indian symbols.

Some students from a nearby high school were invited as guests to discuss two aspects of Indian art - realism and traditional symbols. The students then developed their own personal symbols and told a personal story through art.

A secondary activity to emphasize the nurturing aspect of birth was 'adopt a raw egg and care for it 24 hours a day.' Some of the eggs, of course, died within minutes of being placed into students' hands. The students wanted to throw the broken eggs into the garbage but Cameron insisted on a formal burial. The

students started taking the project seriously. They took their eggs home and many students wrapped them in tiny blankets, made soft beds for them, and even dressed them in clothes.

The theme for next month will be Indian and Métis traditions from the Social Studies curriculum. Cameron has already put together a reader of legends, poetry and other writings. The students will do research on First Nations people. They will bring in elders and visit the local museum. They will learn more about Indian spirituality and symbols. They will take a trip to Avonlea where they will see tipi rings and experience a sweat lodge ceremony. They will participate in an archeological dig.

Cameron says, 'A really important connection is made when students experience a relationship between what they're doing in class and their own lives. When students are allowed some choices and are involved in classroom decisions, they take ownership for what they do, and a project takes on intrinsic value. Then attaining a degree of excellence and getting things done and handed in on time are what students themselves want, and do not present problems for the teacher.'

Some students may find personalizing their learning quite threatening. Cameron suggests, 'Start small and tread gently. Start with issues that seem quite general in nature. Start by giving students small choices. Then move gradually to more major decisions and more personal connections. A teacher will know when the students are ready.'

YOUR TURN

- ◊ Think about the connections that Cameron helped the students make.
- ◊ What ideas can you take from this vignette that you and your students could benefit from?
- ◊ Add them to your planning web.

GLOBALLY

In a shrinking and
increasingly interdependent world,
developing global perspectives is becoming more
and more important.

Some of the fundamental principles of global
education are:

- to identify interrelationships,
- to see cause/effect patterns,
- to understand the complexity of issues,
- to understand and appreciate
values and lifestyles
that may be very different from our own,
- to respect the rights of all peoples,
- to assume responsibility for the well being of our
planet as well as of our neighbour.

Steve teaches a World Issues class to Grade 11 students. *One of the activities he does with his class is 'Woolly Thinking,' an activity from the book Global Teacher, Global Learner.*

The students form ten groups. Each group is assigned an issue (e.g., the arms race, environmental pollution, nationalism). Each group brainstorms and lists on chart paper some causes of and solutions to their issue.

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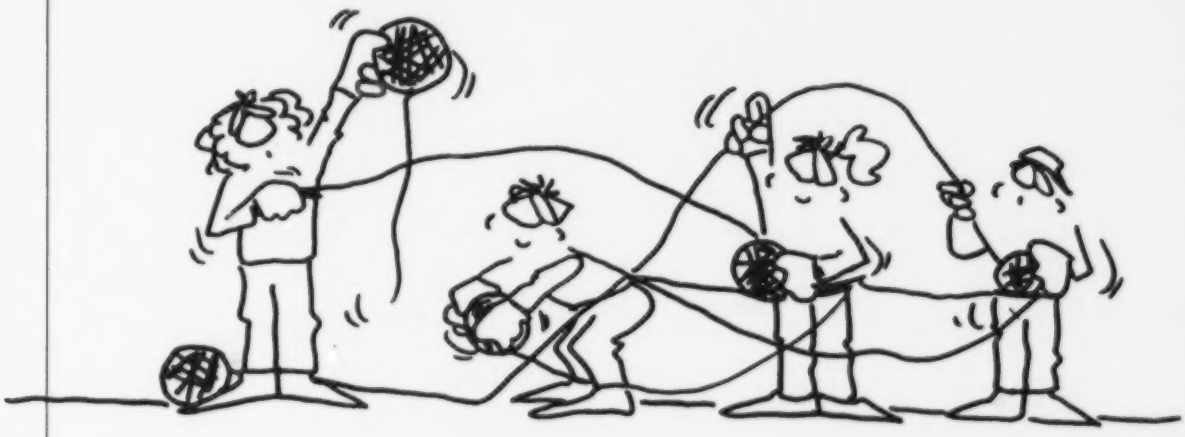


The groups each receive a ball of differently coloured wool. Each appoints a 'static' negotiator who then joins others to form a circle. The other group members are 'mobile' negotiators who negotiate links with other groups. Each time a connection with another topic is made and some agreement reached, the wool is looped around the waist of the static negotiator representing that issue. A closely woven web results.

The ensuing discussion of the connections and/or lack of connections between world issues is supported by a powerful visual image the students have just experienced. But it's not just visual, they did the negotiating, and the connections were made with their own thoughts and words. They felt the tugs on the wool, the wrapping around the waist, the crisscrossing motions - kinesthetic connections. Because of this personal involvement, the discussion leads quite naturally to personal reflections concerning students' thoughts and feelings.

YOUR TURN

- ◊ Think about the various connections made in this vignette.
- ◊ Look at your planning web. What global connections could be made with the topic you are developing?
- ◊ What experiences or questions might lead students to make important personal connections with issues that often seem too broad or too remote?

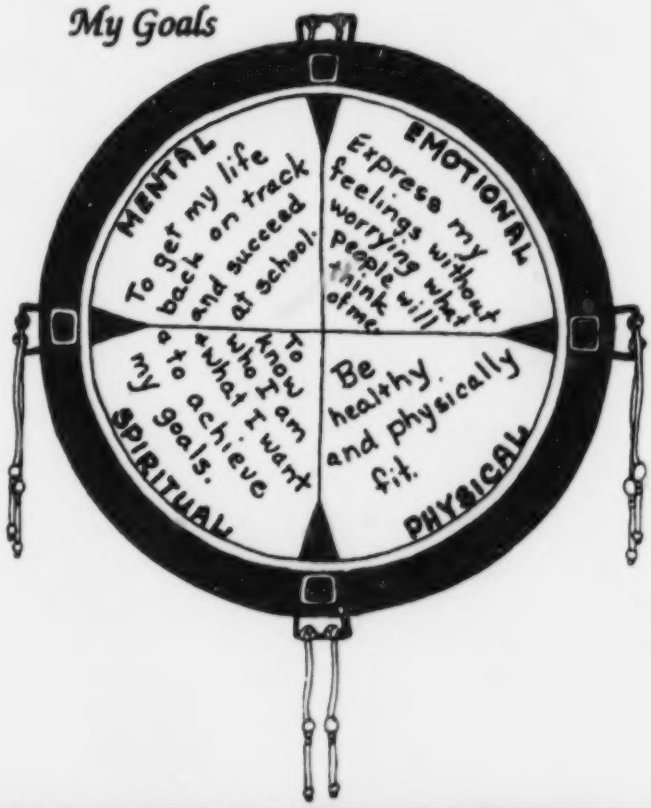
CONNECTING WITH A CIRCLE

The Medicine Wheel is an ancient symbol found in the graphic art of nearly every Aboriginal Nation in the Americas.

It is a powerful means of showing relationships. It may represent the four symbolic races - red, yellow, white and black. The wheel shows that they are all part of one human family. It may represent the four elements - earth, air, fire, water. The wheel shows that all four are valued equally for their gift of life. It may represent the four aspects of human nature - physical, mental, spiritual, emotional. The wheel shows that all four must be equally developed for a balanced and healthy life.

Leah teaches Native Studies. *I start the course with the circle and what it stands for. I ask the students to list 200 things that are round. We discuss and illustrate many examples of circles like the medicine wheel, tipi rings, events that occur in cycles. We deal with the power of the circle and its symbolism. We often discuss issues in a talking circle.*

We use the circle or clusters of circles as the basis for a variety of organizers. For example, near the beginning of the year, I had the students use the Medicine Wheel to set ***personal goals*** *for themselves and then outline a specific* ***personal action plan*** *in a matrix. The following is an example of what one student designed.*


My Goals
MENTAL
To get my life back on track and succeed at school.
EMOTIONAL
Express my feelings without worrying what people will think of me.
SPIRITUAL
To know who I am & what I want & to achieve my goals.
PHYSICAL
Be healthy and physically fit.

My Plan of Action

	Vision	Skills	Resources	Incentives	Action Plan
Mental	To get my life back on track & succeed in school.	-potential -determination	- family - friends - most of all ME - teachers	I will graduate.	Complete all homework on time.
Emotional	To be able to express my feelings.	I can speak well.	My best friend	My friend & I will encourage each other.	Next time I'm afraid, I will speak up & my friend will too.
Spiritual	To know who I am, to achieve my goals.		I often experience inner peace	I will love myself.	Keep a personal journal about my beliefs.
Physical	To be healthy and fit.	- energetic - love recreational activities	- my friends - me - school teams	Feeling good & looking better.	Quit smoking (try) Learn a new activity this year.

During the course of the year we apply the four concepts shown on the Medicine Wheel. We develop the ***emotional*** *through talking circles, the* ***spiritual*** *through Christian Ethics classes, the* ***mental*** *through our class work, and the* ***physical*** *by going out and playing games like lacrosse. We had a Cultural Day at our school where we had over 900 kids doing round dances.*

The students really take to this stuff. Through their work in Native Studies, they really want to be the best they can be. And they learn to see themselves as significant people in their own right as well as within the contexts of their families and various communities - ultimately the international community. They really internalize the idea that, 'The hurt of one is the hurt of all,' and alternately, 'The success of one is the success of all.'

The **'talking circle'** came from Aboriginal cultures. It is a useful discussion format in situations where everyone needs to have a voice, where there is diversity, and where consensus is not necessary. It can be helpful to build trust and create a safe environment for sharing feelings.

General guidelines and procedure are as follows:

- Students sit in a circle.
- An issue or topic is identified.
- An article from nature like a stone (feather, small branch) is used.
- The stone is passed around the circle.
- The person who holds the stone is the only one allowed to speak.
- Everyone participates by speaking in turn and/or listening, although one may choose to not speak and say, "I pass."
- Everyone respects and accepts without judgment what others say, or their silence. There are no put-downs of self or others.
- Everyone has a chance to speak at least once. The stone may be passed around the circle several times.

Andrew teaches a Grade 4/5 class.

My students have a wide range of interests, abilities, and backgrounds. When the year started, there seemed to be a lot of friction among them. Getting them to work in groups was like pulling teeth. So about a month after school started, I decided to try a talking circle.

For a while, every morning when the students came into the room, they sat in a circle. I explained what we would discuss. Sometimes I told the students what the topic would be ahead of time so that they could think about it. At first the topics were of general interest, like 'what makes a good citizen' or 'the role of older people in our lives.' They gradually became more personal, like 'how we've been doing this week' or 'stealing' after some money disappeared. Sometimes the students suggested topics.

It may take as long as an hour for all students to have their say. But it's worth it. And it saves time in the long run in that it helps prevent problems. I'd like to do it every day all year, but because of time, we now do it about twice a week or whenever an issue needs to be dealt with. That works too.

I found that using the talking circle with my students had several advantages.

* *The class became more group oriented. Students got along better, supported one another, and learned to work more cooperatively.*

* *The 'circle' seemed to settle and relax the students.*

* *The Indian and Métis students participated enthusiastically. They were proud to be involved in something from their heritage.*

* *Students assumed more responsibility for their own behaviour. There were fewer discipline problems in class and on the playground.*

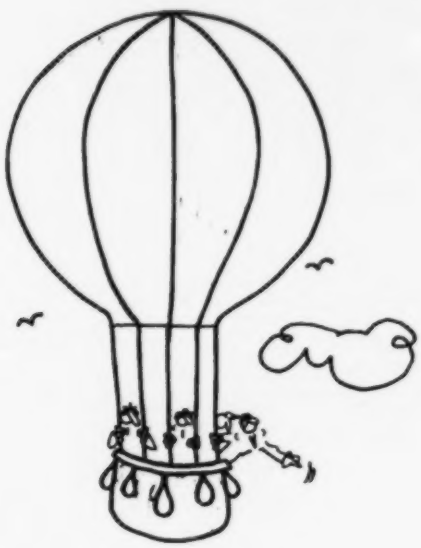
YOUR TURN

◊ Although the material about the Medicine Wheel and the talking circle is generally found in various Native Studies programs, it is appropriate for use with all students.

◊ Think about your plan.

◊ How might you incorporate ideas from these vignettes?

CONNECTING WITH CHANGE



Although most teachers are willing to try approaches they have not used before, many have become comfortable with certain strategies. To try a new strategy, perhaps one described in this book, may be frightening and disconcerting. This is a normal reaction. Change can be scary for both teachers and students.

But change can also be exciting. It can rejuvenate a teacher. It can energize students. In fact, teachers who have taken that risk, invariably say that the effects are synergistic.

CHANGE.. CHANGE.. CHANGE.. CHANGE.. CHANGE.. CHANGE..

The following are some factors that may help teachers and students feel more comfortable with the risk of change.

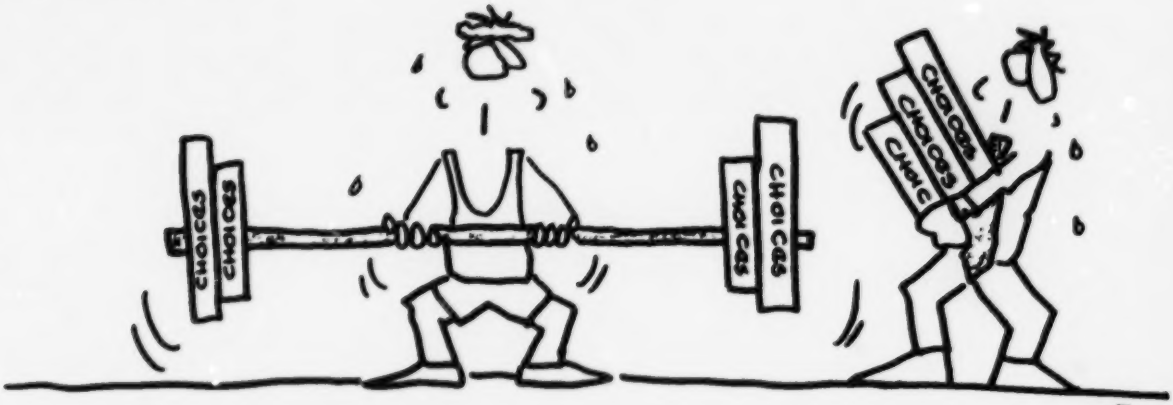
- Working in a school or classroom where the atmosphere says, "It's okay to take risks. It's okay to sometimes experience failure. It's not really failure anyway, it's an opportunity to do some problem solving." To achieve that kind of environment takes time and effort.

- Teaching in an environment where both teachers and students regard one another with respect and dignity.

- Working in a school or classroom where each teacher and student is seen and treated as a complex individual. Some teachers like to put on their 'teacher mask' when they enter the classroom and never allow the students to see into their more personal lives. Similarly, the students are regarded simply as students, an undifferentiated mob. Humans cannot exist or operate effectively in one dimension. It is when we can see and appreciate the many dimensions of each person that teachers and students will regard each other with respect, dignity and perhaps even a sense of humour.

A teacher may well ask, "How can I change things in my school where timetables and procedures seem to be part of the school's traditions?"

- All schools operate within a variety of rules and structures such as timetables, subject areas, and established procedures. It may be appropriate to question and change some of these structures. Even in large schools, people are often willing to try a new idea or plan on an interim basis.



CHANGE.. CHANGE.. CHANGE.. CHANGE.. CHANGE.. CHANGE..

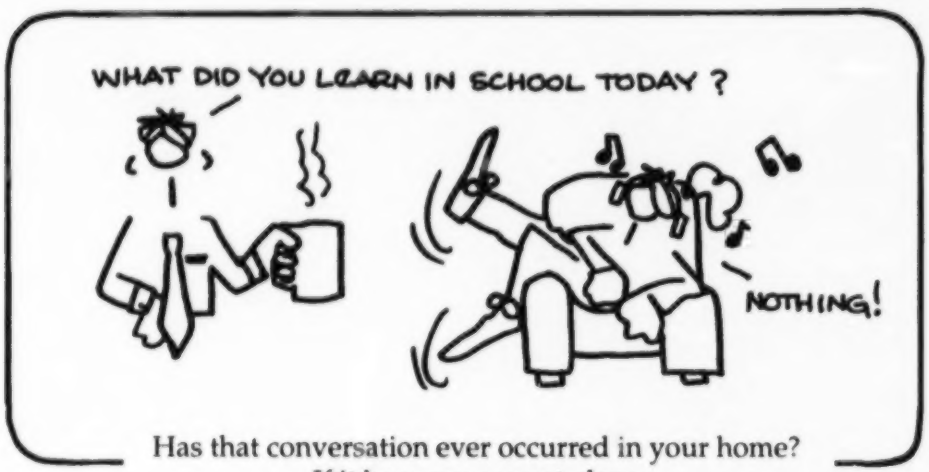
- All people live within a complex set of paradigms. It may be necessary for both teachers and students to let go of some of them. For example, you may have a set idea of what a video 'should' be like - professionally produced, costing $30 000 to make, available on loan. Yet a video made in your class by you or your students for the cost of one film and few hours of time, may actually have more teaching or learning value than a commercial one.

- If things don't go as well as planned, don't give up. Reflect on what might be changed, discuss it with a colleague, and try again. Keep in mind your group of students. An approach or idea that catches the imagination of one group may fall flat with another.

- It may help to discuss a proposed change with the students. When one teacher tried a new strategy, she started out by saying, "I want to try something with you that I've never done before. I don't know if it will work. If it does, maybe we'll do something like it again. Here's my idea. (Explanation) Can you think of anything we should do as a class to make sure that it works?" She found that when she shared the risk with the students, they were just as anxious to make it work as she was.

- Celebrate success! When Kathryn completed the trials of Galileo and Luther, she and two friends went out for dinner and drank a toast to 'trials that really teach.' Seth discussed some of the things he did in his class with a consultant. They made a video of one of his projects to be used at local workshops. Teachers often take their competency and creativity for granted. Let others know what has worked well and celebrate it!

CONNECTING THROUGH METACOGNITION



Has that conversation ever occurred in your home?
If it has, you are not alone.
The daughter's reply is, of course, probably false.
But it may not be dishonest.
She may be genuinely unaware that she has learned anything.

Metacognition involves reflecting on and analyzing our thinking and experiences.

Many of us, as adults, tend to be quite self-analytical. We are usually aware of our thought processes, our values, our skills, and our understandings. We can see relationships. When we come across something new, we connect it with something familiar to understand and remember it better.

Many teachers find it useful to periodically engage their students in metacognition by reflecting with them on their experiences in class. Depending on the situation, questions and discussions will take a variety of forms but will generally focus on the students'

- *knowledge gained,*
- *thinking and how it went from one point to another,*
- *feelings experienced,*
- *values and relationships affected,*
- *understandings of issues,*
- *skills practiced or learned,*
- *understanding of how what they are learning about relates to real life,*
- *or plans for the next step.*

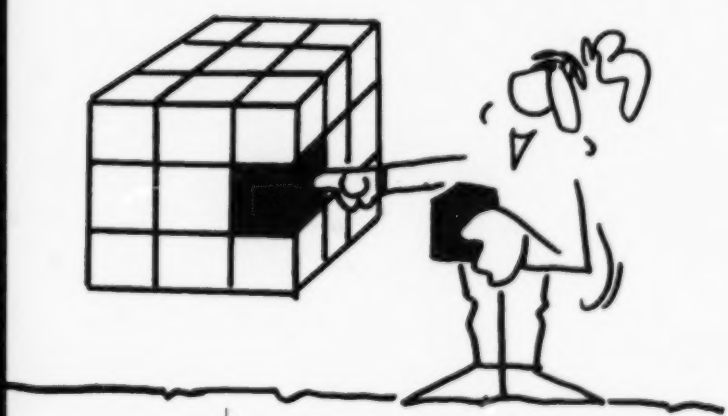
As students become adept at this analysis, they will gain in self-awareness and will be more likely to apply their learnings to other situations.

What has this booklet taught us about the process of making connections? If we break it down to specific steps, they may be as follows.

◊ The teacher identifies a major concept, theme or topic to be taught.

◊ The teacher plans to integrate it in various subjects so that students may understand different relationships and see things from various perspectives.

◊ The teacher identifies some important connections to be made.



◊ The teacher structures a variety of classroom experiences so that students may use all their senses, may organize information visually, may draw on material from different disciplines, may identify personal links, and so on.

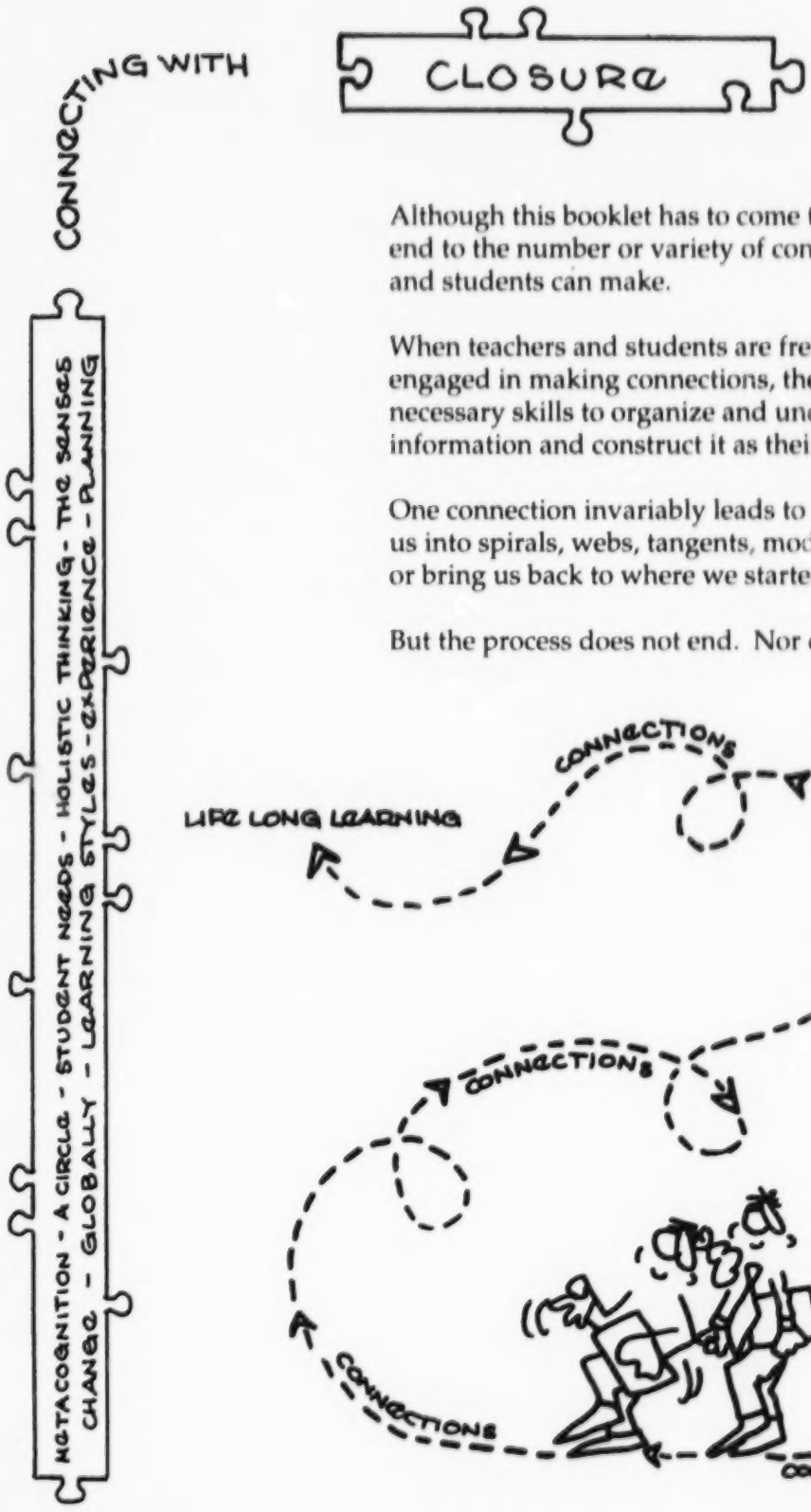
◊ Students are engaged in making some of the decisions about their learning. They may choose partners to work with, decide how to share information learned, or help establish evaluation processes or criteria.

◊ Some flexibility exists to allow teachers and students to at times deviate somewhat from the plan.

◊ Activities are debriefed. Discussions may focus on how students felt, what decisions were made and why, how they might do things differently another time, and, of course, what the connections are!

◊ Students have the chance to reflect. What have I learned? Which of my values are affected? How will my behaviour change? To what other situations can I apply these skills? Where do we go from here?

◊ **Reflect on the connections you have made.**


CONNECTING WITH
CLOSURE
METACOGNITION - A CIRCLE - STUDENT NEEDS - HOLISTIC THINKING - THE SENSES
CHANGE - GLOBALLY - LEARNING STYLES - EXPERIENCE - PLANNING

CLOSURE

Although this booklet has to come to a close, there is no end to the number or variety of connections that teachers and students can make.

When teachers and students are frequently and actively engaged in making connections, they will gain the necessary skills to organize and understand new information and construct it as their own knowledge.

One connection invariably leads to another. It may take us into spirals, webs, tangents, models, new experiences, or bring us back to where we started.

But the process does not end. Nor does lifelong learning.

Appendix A - PLANNING

Maxine teaches English in a high school. *Three years ago some of the teachers on our staff suggested that we change the timetabling so that those teaching the same grades but different subjects would have some of our preparation periods at the same time. This involved major timetabling changes, but the administration and teachers agreed to try it for one year. It's working really well.*

The purpose of the change was to do some cross-subject planning. When we first started meeting with teachers of other subject areas, we were surprised at how many similar things we were doing - independently. Several of us, for example, were teaching students to use a matrix, develop a concept map, or write an essay - in different ways, at different grade levels, with different expectations. Now we are doing these in a more coordinated way, using similar structures with similar expectations at each grade level. Teaching and learning those skills has become so much easier.

There are a lot of opportunities to coordinate the content and concepts, too, especially in the humanities. In fact, the Christian Ethics teacher and I just finished a joint project with our Grade 12 classes. In Christian Ethics he was dealing with the concepts of violence and aggression which are also common themes in Canadian and American literature. So we used those concepts as a basis for a research, debate and essay project. The two of us worked together to gather resources for research, plan teaching procedures, establish the formats of both the debate and essay, and determine the evaluation criteria. We shared the marking. About half of the students were taking both classes. They received credit in both classes for the one project.

Some of the teachers don't participate in our meetings and we all respect that choice. But the teachers who are actively involved in our joint efforts would not want to revert to the former timetabling system.

Appendix B - EXPERIENCE

Dave has students in Grades 2, 3, and 4 in his class. *Every October my school launches fund raising activities for UNICEF. We also plan various ways in which to raise awareness in the school about development issues.*

I found a good story about a family living in Nicaragua. With appropriate introductions and discussions, I began to read the story to my class. When I read how the mothers of the village go to the polluted river to do the family laundry, the children giggled. I was surprised by this reaction. I asked the children what they found funny. 'Washing clothes in the river is funny,' said one. Another said, 'Washing in dirty water, yuk!' I put the story away and explained that we would finish it later.

At recess I discussed what happened with another teacher. I obviously needed to somehow make the situations in developing countries more real to my students. The two of us came up with some ideas.

Before the children were dismissed for the day, I discussed with them the importance of water in our lives and the various ways in which we use it. For homework, I asked the students to discuss water use in their homes with their families and to calculate approximately how much they used during an average day. I also asked them to bring to school some ice cream buckets or other similar containers.

The next day we calculated approximately how many litres of water the students used a day. We measured how many litres their buckets held. A water-carrying brigade was organized.

My class was on the third floor of the school. The children carried their containers down the two flights of stairs to the washrooms in the basement. There they filled them with water, carried them up the stairs to the classroom and recorded how many litres they had. After the fish tanks were filled and plants watered, they carried their water downstairs and dumped it around the trees and on the front lawn. Our goal was to carry the amount of water we used in a day. After cleaning up the inevitable spills and long before we reached our goal, the children were panting and complaining of tiredness, sore hands, and aching muscles.

The students put aside their containers and collapsed in their seats. We discussed how we felt and what we had experienced.

I divided the class into groups of 4. I said, 'I want you to imagine that it is your responsibility to carry all the water your family uses. The well you get your water from is at the corner of 7th Ave. and Burns St. How would your lives be different?' The children suggested that they wouldn't have time to go to school, they would always be tired, and they couldn't play with their friends. Some said they couldn't possibly do it because their family used too much water.

'Well,' I said, 'perhaps we should think of ways that we could use less.' The children discussed this in their groups and offered many suggestions.

The next day when I continued reading the story, no one laughed about doing laundry in a dirty river.

Samantha teaches a variety of subjects in Middle Years classes. *I frequently have the students prepare for and conduct interviews. Sometimes the interviews are real in that students go into the community and interview real people about certain issues. Usually, however, the interviews are simulated.*

My general procedure is as follows.

- *The students and I identify and discuss the issue.*
- *Students list what they know and what they need to find out. They conduct their own research.*
- *Students script questions and answers. Questions are primarily open-ended and address not only factual information, but also values, underlying assumptions, consequences of certain actions, and so on.*
- *Students role-play the interview. This may involve two people or a panel where different people represent different perspectives. Students may choose to wear costumes, or use supporting visual material.*
- *The audience is encouraged to take notes, make comments, or pose thoughtful questions. At times certain students assume the role of news reporters.*

Zoe teaches science in a large high school. *In our Science classes we try to give the students as many opportunities as possible to apply the principles of science. So the students often work, individually or in groups, with models.*

For example, when my class was dealing with friction, each group of students got a toy car and an elastic band. The task was to make the car go as far as possible. Sometimes the projects are more complex. One teacher had his students build bridges using a set number of popsicle sticks and white glue. He gave them the dimensions of the bridge. On the test day, weights were hung on the structures to see which was the strongest.

The procedure is straight forward. We usually supply the materials, outline a specific assignment, and set a reasonable deadline. We allow some class time to work on the models. Actually, I prefer that the students not take these projects home. I want them to use their own thinking without adult help. Then on the designated day, we test all the models. Not all the models work, of course. Then you can ask, 'Why?' We learn from that, too.

In our school the model building is a classroom event. In some schools, it has become more of a science fair and is competitive. Either way works.

Leonard teaches Grade 6 Social Studies. *In the history component of the course, we study the lifestyles of pre-contact Aboriginal peoples of the Americas.*

I pull together all the resources I can get. The students choose a specific group or nation to research. Together we design an advance organizer for jot notes. The research is done mainly in class periods. They then use their information to build a model of a sample home of their chosen nation. I like them to set the model in a box so that they can also show the natural environment. They also write a story, 'A Day in the Life of ____', a story of a day's experiences of a child in the appropriate place and time.

We do most of the work in class except for the model building. That's homework. This keeps the mess and confusion out of the classroom. It also often involves other family members, which is fine. As long as the students have done the research before they begin the model building, they don't allow parents to control the project. The only restriction I make is that they have to use natural materials as much as possible - no plastic trees, please.

I've done this with my class for three years now. I've taken pictures of all the models and shown them to the students. Each year the models have been more elaborate and creative.

Appendix C - LEARNING STYLES

Martin teaches English in a small high school. *I created a type of Venn diagram for the students to use for a character analysis of the novels they read.*

The one on the right was completed by a group of Grade 9 students.

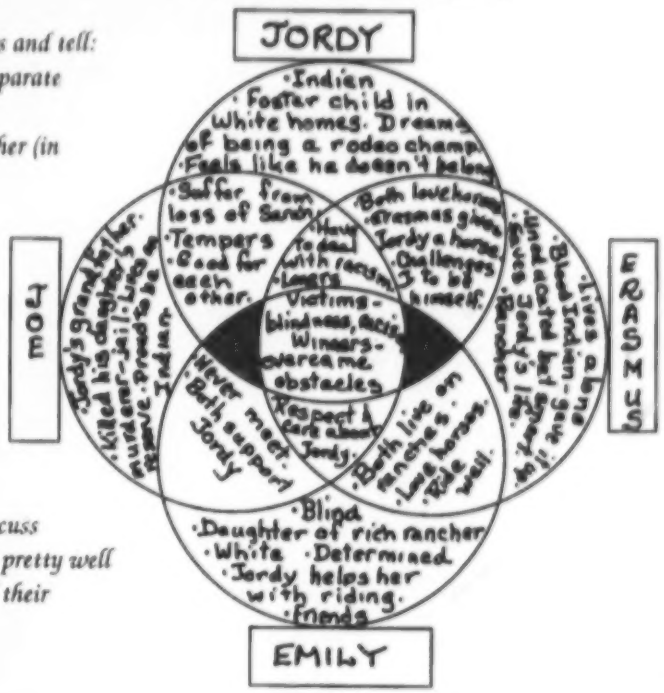
I asked them to identify four main characters and tell:

- *How the characters are different (in the separate sections).*
- *How they are similar and relate to each other (in overlapping sections).*

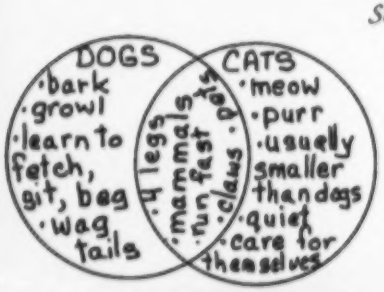
I find this a very useful organizer. To begin with, I have students outline each circle in a different colour. Once they understand how it works, it's fairly easy to do.

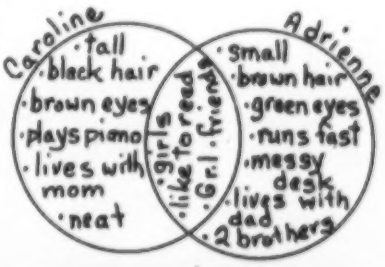
To analyze the characters is a good starting point in a novel study. From there, we can delve more deeply. We can trace the plot, discuss social issues raised, identify metaphors, or do pretty well anything. It all relates to the characters and their relationships.

A Venn diagram based on the characters in WINNERS, by Mary-Ellen Collura



Shirley teaches a class of Grade 1 and 2 students. *She uses a simpler Venn diagram with two overlapping circles in teaching her students to make comparisons. At the beginning of the year it's a whole class activity on the chalkboard. Later, the students can do them in small groups or individually.*





Clarke, J. H. (1991). Using visual organizers to focus on thinking. *Journal of Reading*, 34(7), 526-534.
Provides a rationale as well as many practical examples for using a variety of visual organizers within different subject areas.

Dunn, R., Dunn, K., & Price, G.E. (1975, 1979, 1981, 1985) and Myers-Briggs.
Both have done extensive research and writing on learning styles and have also developed learning styles inventories. Articles written by them or about their work appear in various educational journals.

Kugelmass, J. W. (Winter, 1991). The ecology of the Foxfire approach. *Hands On*, Issue 42, 14 - 20.
Provides a rationale for using the ecological model and describes how it might be used to analyze the social environment of a group of students in a classroom or school.

Novak, J. D., & Gowin, D. B. (1984). *Learning how to learn*. Cambridge: Cambridge University Press.
A short book (199 p.) dealing especially with concept mapping and Vee diagrams. Lots of examples as well as suggestions for evaluation.

Pearce, J. C. (1992). *Evolution's end*. New York: HarperCollins.
Discusses factors in our current lifestyles that inhibit the development of children's intellect, and points to ways that humans may negate these forces and proceed on a natural course of evolution. A powerful book.

Pike, G., & Selby, D. (1988). *Global teacher, global learner*. London: Hodder & Stoughton.
Three hundred pages packed with ideas and activities that show innumerable ways to make connections.

Restak, R. M. (1979). *The brain: The last frontier*. New York: Doubleday.
Deals with the functioning of the two brain hemispheres from a clinical perspective. Definitely dated, but the best of its kind. Informative, easy to read with generous dashes of humour.

Roth, W. M. (1990). Map your way to a better lab. *Science Teacher*, 57(4), 30-34.
Illustrates how flow charts, concept maps, and Vee diagrams may be used in a science course.

The Sacred Tree Curriculum Guide. (1988). University of Lethbridge: Four Worlds Development Project.
Explores symbols and traditions of Indian peoples, and outlines strategies and materials that may be used in the classroom.

Science Olympics: Organization and events manual. (1988). Ottawa: Youth Science Foundation. (Youth Science Foundation, Ste. 904, 151 Slater St., Ottawa K1P 5H3)
Manual provides ideas for science Olympics activities for students from Grades 4 to 12.

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